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ABSTRACT

Seventy-five children (mean age of 7.3 years) were referred for evaluation of learning or behavioral deficits. Each child was administered the Reitan Indiana Neuropsychological Test Battery or the Halstead Neuropsychological Test Battery for Children, depending upon age. Intellectual, academic, developmental and social assessments were performed. Parents of the children were provided training in curricula and strategies designed to intervene and remediate in areas of assessed disabilities. The parents were taught behavior management principles and kept records as to their participation. Home visits by the investigators were made on a regular basis. Children were reevaluated on all instruments at the end of a 12-month period. Data derived from this study will provide information as to the effect of intervention programs on neuropsychological functioning. (Author)

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An Intervention Model

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Numerous programs designed to remediate children with learning deficits have been initiated based on specific causal models of dysfunction. Illustrative examples come from Kephart, Frostig, Karnes, and their associates. Kephart (1960) has emphasized disruptions in perceptual motor responses as a primary cause of various learning disabilities. Perceptual motor deficits are postulated to effect visual perception thereby disrupting the learning process. He designed activities to strengthen these perceptual motor areas in order to improve functioning across a range of academic skills. Kephart's assumption that higher intellectual functions were being impaired by disruptions in sensory motor functioning is far from being completely validated (Hallahan & Cruickshank, 1973). Frostig (Frostig & Horne, 1964) developed tasks to enhance performance in visual perception. Frostig, too, presumed that a disruption in a particular brain related ability is detrimental to a host of environmental performances. In contrast, Karnes (Karnes, Teska & Hodgins, 1970) regarded language deficits as a major factor in predisposing children to academic difficulties utilizing data derived

from the Illinois Test of Psycholinguistic Abilities. She designed tasks to remediate a broad range of disabilities measured by this instrument (Karnes, et al., 1970). Although training from these and other diagnostically based programs have resulted in habilitation of learning difficulties, the outcomes cannot be clearly related to change in any area of neuropsychological functioning. The question of what changes are occurring in brain functions or whether the design of a particular treatment approach is affecting the neuropsychological process for which it was intended has not been ascertained. Inferences about etiological factors in learning disorders and how complex brain functions operate also are beyond the scope of typically used diagnostic tests. If measures do not allow for valid assumptions with respect to the possible interactive effect of etiological factors, designing specific methods of rehabilitation for learning deficits remains an ad hoc procedure regarding the relevant neurological mechanisms that are involved. Presently, there still remains a need for an assessment procedure that would provide detailed descriptions of the neuropsychological changes manifested after the termination of a particular intervention strategy. In order to provide sufficient information, these procedures should be broad enough to account for the complexity of possible neurological deficit and how these specific dysfunctions may have militated against the acquisition of other skills. The assessment should include the evaluation of higher brain functions (intelligence, concept formation, complex perceptual skills, memory

and reading) and lower functions (motoric and sensory perceptual skills). This will allow for a more complete picture of a child's adaptive abilities. Only a psychological assessment procedure of demonstrated neurological validity will offer the opportunity to relate neurological deficits to their developmental consequences (Reitan & Heineman, 1968).

The Reitan Indiana Neuropsychological Test Battery is an instrument designed to assess these adaptive abilities in young children (Klonoff, Robinson & Thompson, 1969). This battery has been found to be valid for predicting neurological deficits on the basis of a profile of neuropsychological abilities (Klonoff & Lowe, 1974). The battery consists of numerous behavioral measures tapping the ability of an individual to perform in motoric, perceptual, conceptual, tactile, visual, and language areas. This type of assessment permits a broad sampling of brain behavior relationships via four types of inferences: 1) inter-group differences and level of performance across a span of measures can be analyzed statistically; 2) information concerning patterns of performance leads to recognition of intra-individual discrepancy; 3) the battery provides information about specific deficits which are valid indicators of cerebral impairment; and 4) comparisons of performance of the right versus the left side of the body provides significant information about the integrity of the contralateral cerebral hemispheres.

The validity of this neuropsychological battery to identify the

presence, type and location of cerebral disease has been demonstrated repeatedly with adults (Russell, Neuringer & Goldstein, 1970). Examples include the capacity to differentiate between brain damaged and non brain damaged adults (Reitan, 1966; Wheeler, Burke & Reitan, 1963; Wheeler & Reitan, 1963) and child populations (Reed, Reitan & Kløve, 1965) and also between cerebral lesions in the right versus left hemisphere (Reitan, 1964). Behavioral deficits of children with known brain damage have also been studied and compared to learning disabled, emotionally disturbed, and normal populations (Reitan & Heineman, 1968; Reed, Reitan & Kløve, 1965; Boll, Note 1; Reitan & Boll, 1973; Klonoff & Lowe, 1974). By utilizing this battery, the behavioral consequences of cerebral brain damage have been measured not only in primary sensory and motor functioning, but also on language functions, judgmental abilities, analytic reasoning, and the ability to solve problems involving spatial and temporal relationships. Reitan and Boll (1973) demonstrated that early school age children exhibiting neuropsychological deficits on the Reitan Indiana Neuropsychological Test Battery were predisposed to academic and behavioral difficulties. These investigators, using blind interpretation, sorted the test protocols with a promising degree of accuracy into one of four groups. Children with no history of academic or emotional problems, children with documented brain lesions, children with academic difficulties only, and children identified as having behavioral problems. It was noted that children identified as having academic difficulties only, compared

to those with behavioral difficulties, had many more problems in the area of abstract reasoning, concept formation and incidental learning.

The capacity of neuropsychological assessment for differentiating between groups of children differing in academic success, emotional adjustment, and for identifying specific patterns of adaptive abilities predictive of success and failure in these areas can lead to a system of intervention strategies based more on an individual's capabilities and current potentialities than on vague theoretical assumptions. The approach of interrelating psychological and neurological data in terms of the treatment of learning and/or behaviorally disordered children, based on a neuropsychological assessment, is a promising technique available to psychologists. Traditional approaches for the treatment of children with learning and behavioral disorders have not related neurological deficits to their developmental and behavioral consequences, but rather, have led to "shotgun" and often counter-productive interventions. Without an adequate profile of adaptive abilities, children are often expected to perform adequately in just those areas in which cerebral deficit curtails their abilities. These deficits have consequences in the social as well as academic sphere. Not only parents, but professionals have an inadequate picture of these adaptive abilities and have not been in a position to provide a coordinated treatment program. With these difficulties in mind, a training program was devised at the University of Washington Department of Psychiatry and Behavioral Sciences, utilizing neuropsychological assessment as a

method for specifying the functioning of a child across a broad range of behaviors.

Following the reasoning that parents are the most appropriate focus for dealing with problems of their children, a treatment model was designed with parents involved as the principal facilitators. This strategy was felt to be particularly relevant in the light of the lack of availability for this type of treatment approach in professional settings and the primary influence of parents in helping to insure the prevention or amelioration of disorders of children with learning and behavioral deficits (Hawkins, 1972). It was hypothesized that parents might acquire the modification skills and changes in their own behavior, if documentation would be provided which clearly identified volitional and non-volitional aspects of their child's behavior and the degree to which a child's disabilities or deviant behaviors are a result of developmental inadequacies or cerebral dysfunction. The parents could then be enlisted as the primary facilitators of a treatment approach that does not assume that they are the principal factors in causing childhood disorders. The combination of neuropsychological assessments with training parents to administer strategies to remediate deficits in behavioral, visual motor, perceptual, and higher level functions in a natural environment is relatively unique. Evidence clearly suggests that the ability to move into the natural environment of the child in order to help bring about rehabilitation or remediation leads to work with the parents. Ross (1972) stated,

> If behavior is to be modified, the modification must take place when and where the behavior manifests itself. This is rarely the therapist's consulting room. And as a consequence, behavior therapists working with children frequently find themselves working through the adults who are in a position to be present when a target behavior takes place and who have control over the contingencies of reinforcement. (P. 919.)

Thus, by using neuropsychological assessment and acquiring a profile of abilities of a child across a broad range of behaviors influenced by brain functions and relating these adaptive abilities (intelligence, concept formation, complex perceptual tasks, etc.) to emotional adjustment, academic achievement, and environmental contingencies, we have engendered to teach parents a remediation approach, using behavioral methodology, based on the broadest sampling of a child's internal and external environments. This method provides valid answers to questions often raised by parents as to why a child may be experiencing difficulties (Reitan & Heineman, 1968).

Design of Clinic

The clinic solicited referrals for children between the ages of five and 12 currently experiencing behavioral or learning difficulties. Seventy-five children are currently being investigated. In almost all cases, the subjects were referred for neuropsychological assessment because of a learning and/or behavioral problem for which it

was thought that cerebral dysfunction might in some way be a factor. The mean age for these children was 7.3 years of age. Birth histories, medical histories, and developmental milestones were gathered from both parents and appropriate medical personnel. Referrals came from physicians, school personnel, and sources within a large university hospital setting. None of these children manifested hard neurological signs of brain dysfunction. All fell within the broad category of learning disabled, Wechsler Full Scale I.Q.'s within the Average Range and one to two years behind academically with a broad sampling of behavior problems, focusing on hyperactivity, compliance and peer relations.

Parents of referred children were required to complete a detailed description of historical and current aspects of a child's functioning. Each child was administered the Reitan Indiana Neuropsychological Test Battery or Halstead and Reitan Neuropsychological Test Battery, the Wechsler Intelligence Scale for Children, and a reading evaluation. Skill age equivalents were derived by the administration of the Developmental Profile (Alpern & Boll, 1972). A questionnaire on personality factors was completed by the parents and teachers (Becker, 1974). Teachers also completed a form designed to provide data on learning behavior of these children in a school situation (Valett, 1973). A home visit and school visit were performed in order to gather data on the natural environmental functioning. If a pediatric examination had not been performed within the past six months, the staff pediatrician made

these examinations. At the completion of these procedures, the overall assessment was shared with the parents. Emphasis was placed on identifying the environmental demands on children and how these interfaced with their adaptive abilities as related to neuropsychological assessment. Goals were then generated in conjunction with the data gathered from the assessment procedure. Predicted levels of success were set for a 12-month intervention period according to a procedure outlined by Kirusek (1972). Parents were required to read a book on behavior management (Patterson, 1971) in order to provide them with knowledge of principles of behavior change and teach them baselining and record keeping. They were also evaluated on their knowledge of these principles prior to designing intervention strategies. Intervention strategies in all areas of assessed deficit were then generated by the clinic staff and parents, and detailed instructions in a written form on the procedures of the intervention program were given to parents. The assessment data and the intervention strategies also were coordinated with the child's school program. These programs might entail problem solving skills, visual-motor training, direct academic skill training and/or behavioral interventions. Parents kept records as to their time spent in administration of a particular aspect of a program. Weekly home and school visits were made by clinic staff for one month following the initiation of a home program. After the initial month, frequent home and school contacts were maintained, often by telephone. When a particular level of success or goal was reached, programs were modified.

Parents were encouraged to make changes in any aspect of a program in which they felt competent. At the end of the 12-month period, children, parents and teachers were readministered the initial instruments to assess the outcome of treatment. An emphasis on involving parents as team members and working at teaching them skills rather than remaining dependent upon the clinic was paramount. It is encouraging that since this clinic's inception, 75 families have been enrolled with no "drop-outs" in a population evenly distributed across socio-economic groups.

Illustration of Treatment

R.B. was a ten-year, two-month old male who was referred to the Parent/Child Learning Clinic because of behavioral problems in school and at home. The school couselor referred to R.B. as a "defiant avoider" who produced virtually no work in classes, was disruptive, and frequently aggressive, especially on the playground. R.B.'s parents described him as having a "temper," poor self-control and much oppositional behavior. They felt he often refused or forgot to do tasks that were asked of him and as a result was frequently in conflict with his mother, who in turn admitted that she has limited tolerance for such defiance. R.B. has a younger brother age six and an older sister age ten with no apparent difficulties. Discipline at home is a problem only for R.B. Parents also reported incidents of stealing. R.B. himself stated he had difficulty concentrating, a tendency to daydream, distractibility and little interest in his school work.

The traditional psychological examination of this child indicated that there were no significant differences between his Verbal and Performance I.Q.'s on the Wechsler Intelligence Scale for Children and he functioned within the Average Range intellectually although he was one and one-half to two years behind in reading, spelling and arithmetic on the Wide Range Achievement Test. He did show variability on the Verbal Scale, doing poorly in Arithmetic Reasoning and Information. The clinic administered the Halstead Neuropsychological Test Battery which has been described and validated elsewhere (Reitan, 1974). This child manifested numerous deficits indicative of cerebral dysfunction on neuropsychological testing. Two areas which are strongly indicative of implicating cerebral deficits as a major factor in this child's problems are his language deficits and a difficulty with abstract conceptual tasks. Although his strongest area was in terms of tactual problem solving, he performed this task and numerous others on the neuropsychological test battery with less efficiency on the right side than on the left side of his body. R.B. is right handed. This type of performance is indicative of children who have deficits to the left cerebral hemisphere, which curtail their abilities in terms of language functions (Reitan & Heineman, 1968). In reference to conceptual deficits, R.B. was extremely limited in his ability to understand cause and effect relationships. "This deficit which is common in persons with brain lesions regardless of the adequacy of intelligence

test scores probably represents an important key to behavior difficulties" (Reitan, 1966). Certainly, R.B.'s distractibility and inconsistent performance in both school and home are related to this deficit. In marked contrast to poor abstract conceptual abilities was R.B.'s abilities to solve problems through kinesthetic and spatial modalities. While blindfolded, R.B. was asked to place geometric figures in their appropriate slots in a form board. His exceedingly rapid scores, accurate memory for their shapes, his excellent skill at visualizing and recording the interrelationships of these figures clearly indicates that manipulative problem solving is one of R.B.'s best areas of functioning. This was manifested on numerous neuropsychological subtests. From his poor performance on the higher level abstract tasks, the inference was made that in some cases his behavior would seem random and cause and effect relationships would be very difficult for him. Further, he manifested very clear language deficits He was unable to identify accurately various parts of the body and showed marked left/right confusion. Language deficits of both receptive and expressive nature were manifested on the testing. These were, however, mild.

Parents viewed R.B.'s problems as motivational rather than a function of developmental deficiencies related to cerebral deficits. He was seen as an emotionally disturbed child. During the initial home visit, R.B.'s non-compliant behavior was quite evident. Numerous arguments over compliance ensued. The school visit produced a similar picture. R.B. was viewed as an intelligent child who had

"chosen" to behave inappropriately. The assessment was shared with both parents, school personnel and R.B. Problem areas were identified in light of the evaluation and areas of unrealistic expectations were explored. It was evident from the neuropsychological data and the behavioral data gathered in R.B.'s school and home that expectations were being placed on him in just those areas in which cerebral deficit had curtailed his abilities. He was expected to participate in playground games after having complicated verbal instructions. Academic assignments were presented verbally, and often forgotten by R.B.

The clinic designed specific problem solving activities and listening exercises for R.B. at home. The school sent home material for R.B. in areas in which he demonstrated competence rather than difficulty. His parents set aside a particular time for R.B. to do this work and kept data on his attentiveness and performance. Baseline data was taken on behaviors of particular concern (shouting, cursing, defiance, forgetting) and an intervention program was begun whose goals were interfaced with the deficits in his problem solving and language skills. For example, the parents kept data on the frequency of R.B.'s positive responses to their requests. In addition, they required R.B. to indicate understanding by repeating them. He was rewarded for success in this area (e.g., following complicated verbal instructions, expectations to comply with rules without guidance, and academic areas). R.B. was reinforced by marks on a chart which he was able to redeem for money at any point during the week. School

behavior was also rewarded in a similar manner.

On retesting one year later, R.B. demonstrated much milder discrepancies in functioning on both sides of his body, fewer language deficits and improved performance on the Arithmetic and Information subtests on the WISC; however, his abilities in abstract conceptual skills had made remarkable progress. Behavior was no longer a problem in school. The goals that R.B.'s parents had identified had been attained. Behavioral ratings in both home and school demonstrated marked improvement. R.B. had gained one and one-half years in reading and arithmetic during the year's time. R.B.'s parents continued to work with him over "listening skills" but no longer saw him as a non-compliant child. They felt they had modified their own behavior in light of R.B.'s deficits and continued to reinforce him for attentiveness. They learned a "style" of making certain R.B. understood the consequences of his behavior and they consistently checked to see that his perceptions were similar to theirs. Parents and school personnel felt R.B. to be a "more reasonable person."

Significance

The changes in neuropsychological profiles of individual children provide interesting preliminary data as to the types of changes occurring in neuropsychological functioning with a group of children manifesting learning and behavior disorders. The neuropsychological data gathered in conjunction with academic assessments and school and parent ratings enhances the knowledge of brain-behavior rela-

tionships in children (Reitan, Note 2). The longitudinal data derived from this study will provide relevant information in terms of future types of intervention programs and how they related to behavior presumed to be influenced by brain function.

A number of preliminary findings of a subsample (N of 12, mean age, 8.3) of the 75 children under investigation is of considerable interest. The functioning of these children in the area of concept formation as measured by neuropsychological test battery variables (Categories Test, Color Forms, Progressive Figures, Trails B, Matching Pictures) has improved well beyond expectation for advancement in chronological age. Their performance on these conceptual tasks was initially more impaired than the Minimal Brain Dysfunction groups assessed by Reitan and Boll (1973) and the MBD group assessed by Klonoff and Lowe (1974).

Parents of these children are spending an average of 3.7 hours per week over the 12-month period with a range of 2.3 - 6.0 hours.

Teachers, who in general viewed parent participation in remediation with skepticism, had become more accepting in terms of ratings of effectiveness of parent involvement and competence.

Summary

The use of neuropsychological assessment as an adjunct to behavioral interventions appears to present a promising addition to a clinician's ability to impart skills to parents of behaviorally and learning disordered children. Although the cost of this type of

intervention is considerable, it is minimal when compared with long-term treatment whose goals may be grounded on faulty diagnostic assumptions and whose outcomes suffer from these inadequacies. The treatment program described emphasizes the parents as the most competent persons available to assist the child in achieving his developmental potentialities within the home, school and community.

Reference Notes

1. Boll, T. J. Consideration of past and present methods of assessing brain behavior relationships in children. Paper presented at the Meeting of the Western Psychological Association, San Francisco, California, 1971.

2. Reitan, R. M. Personal communication, January, 1975.

References

Alpern, G. D. & Boll, T. J. Developmental profile. Indianapolis, Ind.: Psychological Development Publications, 1972.

Frostig, M. & Horne, D. The Frostig program for development of visual perception. Chicago: Follett, 1964.

Hallahan, D. P. & Cruickshank, W. M. Psychoeducational foundations of learning disabilities. Englewood Cliffs, N.J.: Prentice Hall, 1973.

Hawkins, R. P. It's time we taught beyond how to be good parents (and don't we wish we started a long time ago?). Psychology Today, 1972, 6, 28.

Karnes, M. B., Teska, J. A. & Hodgins, A. S. The effects of four programs of classroom intervention on the intellectual and language development of 4 year old disadvantaged children. American Journal of Orthopsychiatry, 1970, 40, 58-76.

Kephart, N. C. The slow learner in the classroom. Columbus, Ohio: Charles E. Merrill, 1960.

Klonoff, H. & Lowe, N. Disordered brain functions in young children and early adolescence: Neuropsychological and electroencephalographic correlates. In R. M. Reitan & L. A. Davison (Eds.), Clinical neuropsychology: Current status and applications. Washington, D.C.: V. H. Winston & Sons, 1974. Pp. 121-179.

Klonoff, H., Robinson, G. C. & Thompson, G. Acute and chronic brain syndromes in children. Developmental Medicine and Child Neurology, 1969, 11, 198-213.

Patterson, G. R. Families: Applications of social learning to family life. Champaign, Ill.: Research Press, 1971.

Reed, H. B. C., Reitan, R. M. & Klove, H. The influence of cerebral lesions on psychological test performances of older children. Journal of Consulting Psychology, 1965, 29, 247-251.

Reitan, R. M. Psychological deficits resulting from cerebral lesions in man. In J. M. Warren & K. Akert (Eds.). The frontal granular cortex and behavior. New York: McGraw-Hill, 1964. Pp. 295-312.

Reitan, R. M. A research program on the psychological effects of brain lesions in human beings. In N. R. Ellis (Ed.). International review of research in mental retardation (Vol. 1). New York: Academic Press, 1966. Pp. 153-218.

Reitan, R. M. & Boll, T. J. Neuropsychological correlates of minimal brain dysfunction. Annals of the New York Academy of Sciences, 1973, 205, 65-88.

Reitan, R. M. & Heinemann, C. Interactions of neurological deficits and emotional disturbances in children with learning disorders: Methods for their differential assessment. In J. Hellmuth (Ed.). Learning disorders (Vol. 3). Seattle, Wa.: Special Child Publications, 1968. Pp. 93-135.

Ross, A. O. Behavioral therapy. In B. B. Wolman (Ed.). Manual of child psychopathology. New York: McGraw-Hill, 1972.

Russell, A. W., Neuringer, C. & Goldstein, G. Assessment of brain damage: A neuropsychological key approach. New York: Wiley-Interscience, 1970.

Wheeler, L., Burke, C. H. & Reitan, R. M. An application of discriminant functions to the problem of predicting brain damage using behavioral variables. Perceptual Motor Skills, 1963, 16, 417-440 (monograph supplement).

Wheeler, L. & Reitan, R. M. Discriminant functions applied to the problem of predicting cerebral damage from behavior tests: A cross validation study. Perceptual Motor Skills, 1963, 16, 681-701.

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